

Further, application 30 also initiates generation of user interface windows and menus to support users entry, amendment and maintenance of an expression. It should be noted that in another embodiment a user entered expression may be interpreted (rather than compiled) in response to initiation of execution of application 30. Though this approach may involve a reduction in application 30 execution speed.

Figure 2 shows preliminary system functions involved in creating and preparing a user entered expression for use by application 30 (Figure 1). An expression 45 entered by a user via the PC user interface 10 display menu associated with the application interface 25 (Figure 1) is parsed by parser 60 of Figure 2 to verify (76) the expression syntax is valid. Specifically, an entered expression is deemed valid if the expression syntax is compatible with application object 31 (of application 30) used to process the expression. Upon successful validation, if there already is a matching compiled group, then the expressions are recompiled with a new version number. The application 30 allocates both a Type and Group identifier associated with application interface 25 (Figure 1) to the entered expression for use in establishing the expression relationship (74) with application object 31. Failure to validate the entered expression causes generation of a displayed message to a user indicating a syntax check failure and identifying particular elements or features of the entered expression that are unacceptable. Upon successful validation and establishing the expression relationship with application object 31, the resultant expression is stored in unit 50.

Figure 3 shows a flowchart of a server system process using a database to support use of user customizable expressions by multiple different executable applications, e.g., application 30 plus another different application 90 (not shown in the drawings to preserve drawing clarity). In step 303, following the start at step 300, the server system employs a database to associate application interface 25 of application 30 (Figure 1) with a particular set of data items to be made available for user inclusion in an expression to be used by application 30. Specifically, this particular set of data items is associated with an expression entered using a menu associated with application interface 25. Other data items are excluded from being available for inclusion in the expression entered using the menu associated with application interface 25. The server system also uses the database to associate application 90 with a different set of data items to be made available for user inclusion in an expression for use by application 90. Data items that may be selectively made available for incorporation in an expression in a health care insurance reimbursement application may comprise, for example, a patient identifier, a patient physical characteristic, patient address information and patient medical

record information. In practice, the type of data items to be used depends on the nature of the application processing them.

An illustrative business application display window for use in displaying an expression employed by an application interface (such as by application interface 25 of application 30) is shown in Figure 6. The application interface display window 570 of Figure 6 illustrates use of a healthcare insurance reimbursement application (e.g., application 30) to determine qualification for insurance reimbursement. Specifically, the Figure 6 display image window allows a user to select a previously created expression via display element 526 and display it in element 579 in response to selection of item 588. The particular expression in item 579 shown in Figure 6 is processed by the application to determine patient qualification for reimbursement for diagnostic procedures for particular conditions (specifically, medical conditions identified by codes 400.1, 400.2 and 400.3). A user may select icon 575 to add in an expression from storage to the menu of available expressions (displayable via element 579) in the Figure 6 interface window.

In step 306 of Figure 3, the server system employs the database to further associate application interface 25 of application 30 with candidate template expressions available for user selection and entry using interface 25. The server system also advantageously receives user selection information identifying one of the multiple candidate template expressions for inclusion and amendment within a displayed expression entry prompt element. This provides a user friendly and efficient way for a user to easily derive a desired function. The server system similarly associates application interface 25 of application 30 with expression operators and acceptable parameters and values for user selected data items as well as with an identifier indicating the particular application 30 and application interface 25 involved. A user interface display is generated by the server system in step 309 for providing a user interface display image (exemplified in Figure 7) supporting user entry of an expression. In step 314, the server system receives a user entered expression incorporating one or more data items selected from the available items specifically associated with application interface 25 of application 30. The server system updates the database in step 318 to associate the received expression with particular application interface 25 of application 30.

In step 324, the server system compiles the received expression and associates the compiled expression with a version identifier and an application Type and Group identifier before storing the compiled expression in step 326. Alternatively, the expression may be associated with one or more of the version identifier, application Type and Group identifier before compilation as described in

connection with Figures 1 and 2. The application Type indicator identifies a particular application and application interface (of multiple applications) involved in supporting entry and processing of a user entered expression. In step 329, the server system links the compiled expression with application 30 and specific objects within the application (such as objects 31 and 33 of Figure 1) to support execution of application 30 together with the compiled expression. The expression version number is used to ensure the latest compiled expression version is employed by application 30. However, a desired prior version expression may alternatively be selected and applied. In step 331, the compiled expression is resolved using data provided from application 30 (and objects 31 and 33) and a result is returned to application 30 for display and access by a user. The result may comprise a computed value, a definition of rules to be used, a verification that a resolved expression is true (or not true), or an identification of records derived from a search of a database in response to resolving the expression, for example. A user customizable expression may be used to tailor an application function in a multitude of ways. The expression may be used to customize formulas, to search for particular records, to assign services to an entity, to define rules for routing scheduled task lists and other purposes. Further, a notification may be processed for display to a user by application 30 in response to the received result. The notification may indicate a success or failure of a task such as an assignment of records to an entity or to indicate a reason for failure, for example. The process of Figure 3 terminates at step 335.

Figure 4 shows a flowchart of a process (as employed in step 309 of Figure 3) used by application interface 25 of application 30 (Figure 1) for providing a user interface display image supporting user entry of an expression. In step 405 of Figure 4, following the start at step 400, application 30 initiates generation of a user interface display image supporting user creation of an expression as exemplified in Figure 7. The generated display image includes a window 710 listing multiple data items including a set of data items available for inclusion in an expression entered by a user via prompt element 500. The data items are hierarchically listed within window 710 and each data item is associated with an item description displayed in response to a user placing a cursor upon the item representative icon. The set of data items available for inclusion is specifically associated with application interface 25 and application 30. A different set of data items is associated with a corresponding different application (e.g., application 90 as previously mentioned). The different set of data items is also made available for user selection via window 710 for inclusion in an expression for use with the different application. Data items available for inclusion